

EXECUTIVE SUMMARY

Project 17 MA 215 H5162 01L [Federal Reference No. 017-A(874)] consists of a study to prepare a design concept and long-range implementation strategy for the addition of general-purpose lanes and HOV lanes to Interstate 17 within the study limits. The study area begins on I-17 at approximately Milepost (MP) 214.0, just south of the interchange with State Route (SR) 101L, and extends north to approximately MP 244.5, the Black Canyon City Traffic Interchange (TI). In addition to the mainline widening, the study evaluates the existing two-way frontage roads between Happy Valley Road and Carefree Highway and recommends how best to address the long-term traffic needs in this six-mile section. The configuration of the Table Mesa TI is also evaluated and recommendations for improvement made.

The project is located within the Arizona Department of Transportation's (ADOT) Phoenix and Prescott Districts within Maricopa and Yavapai Counties.

The purpose of the study is to determine how best to add capacity along the corridor for better traffic operations. The study will provide a long-range plan that will guide future decisions regarding the interim and ultimate improvements required to modify I-17 to meet the capacity and operational needs of the traveling public over the next 20 years. It will also consider how best to improve the geometrics at the Table Mesa TI. New and existing frontage roads between Rose Garden Lane and Carefree Highway (SR 74) will also be analyzed and recommendations for improvements made.

The **mainline widening** was separated into several sections for analysis. The Recommended Alternative for each of these sections is discussed in the following paragraphs:

Through I-17/SR 101L TI: The recommended alignment widens I-17 by adding one lane in each direction through the I-17/SR 101L TI. Near Rose Garden Lane, two general use lanes and an HOV are added in each direction for a total section of 5+1.

North of Rose Garden Lane to North of Deer Valley: Three general use lanes plus an HOV lane will be added in this segment, for a total of five general use lanes and an HOV lane (5+1) in each direction. One-way frontage roads exist on both sides of I-17. The west frontage road will not be disturbed with the addition of barrier between the mainline and the frontage road. The east frontage road will require relocation outward and the acquisition of approximately 18 feet of R/W with the addition of barrier between the mainline and the frontage road and the standard 15 feet spacing between the frontage road and new R/W line. No auxiliary lanes are provided since two SR 101L lanes are added northbound and two are dropped southbound under Rose Garden Lane. An underground storm drain system will be required to carry onsite flows on both the east and west sides.

North of Deer Valley to Scatter Wash: A 5+1 section will also be provided in this segment of I-17. On the east side of I-17, the frontage road will be separated from the mainline by 18 feet (excluding shoulders) and from the new R/W line by 15 feet. An underground storm drainage system will be required to carry onsite flows. Approximately 30 feet of new R/W will be required on the east side. On the west side, the frontage road will be separated from the mainline by a 52-foot wide drainage channel that will convey onsite flows. Approximately 60 feet of R/W will be required on the west side. Auxiliary lanes are provided in both directions from Deer Valley to Pinnacle Peak.

Scatter Wash to Skunk Creek: The 5+1 mainline section will continue in this segment of I-17. The City of Phoenix plans to construct one-way frontage roads from Pinnacle Peak Road to Happy Valley Road. A concrete-lined channel for offsite drainage on the east side is added in this section. With the east frontage road offset 18 feet from the mainline, and the channel and maintenance area added, the new right-of-way requirement will be 79 to 91 feet, varying with channel width. On the west side, the

frontage road will be separated from the mainline by a 52-foot wide drainage channel which will carry onsite flows. Approximately 60 feet of R/W will be required on the west side. Auxiliary lanes are provided in both directions from Pinnacle Peak to Happy Valley.

ADOT is currently discussing reductions in R/W acquisition with two property owners on the east side of I-17 between Pinnacle Peak Road and Jomax Road. In order to maximize the developable property, Vestar (Pinnacle Peak to Happy Valley) and USAA (Happy Valley to Jomax) have requested that ADOT limit its R/W acquisition to 30 feet and construct a closed drainage system instead of a large drainage channel in these areas. USAA would construct a detention basin/storm drain system to collect and route storm water east of Norterra Parkway to the south and provide 100-year 2-hour retention for the area located west of Norterra Parkway in accordance with City of Phoenix criteria. Vestar would be responsible for intercepting and re-routing all overland flow to prevent it from reaching ADOT R/W. A Memorandum of Understanding has been executed by ADOT with Vestar outlining the requirements under which the R/W will be reduced along the Vestar and the State Land parcels. A similar MOU is anticipated to be executed with USAA however, at the date of this publishing the agreement has not been completed.

ADOT is currently conducting a study for the construction of a new traffic interchange (TI) along I-17 at the Jomax Road alignment. The purpose of this study is to develop concepts for the new interchange that will adequately serve the transportation access needs of the area.

Modifications to the I-17 and Happy Valley Road Roundabout TI are under design and are currently scheduled for construction in Spring 2005. This project consists of improving operational characteristics and capacity.

Skunk Creek to South of Dynamite: The concrete-lined channel for offsite drainage on the east side is not required north of Skunk Creek; however, a ditch is provided between the mainline and frontage roads on both sides of I-17 for onsite drainage. Approximately 56 feet of R/W will be required on the east side and 30 feet on the west side. In addition to the 5+1 mainline section, space for future auxiliary lanes is provided in both directions from Happy Valley to Jomax.

South of Dynamite to North of the Central Arizona Project (CAP) Canal: The 5+1 mainline section will continue in this segment of I-17. From Dynamite to the CAP, a new subdivision is located on the west side of I-17 adjacent to the existing three-lane frontage road. To avoid impacts to the subdivision and its existing screen wall, barrier is recommended between the mainline and frontage road on the west side through this section. An underground storm drain system will be required to carry onsite flows on the west side. Space for an auxiliary lane will be available when the existing frontage road is converted to one way and narrowed to 28 feet. No new R/W will be required on the west side. On the east side, a full section was applied, including provision for a future auxiliary lane. A ditch for onsite flow is provided between the mainline and the frontage road. Approximately 52 to 68 feet of new R/W will be required.

North of the CAP to Dixileta: Full mainline widths are employed with ditches between the frontage roads and mainline for onsite drainage and width for a future auxiliary lane in both directions. Approximately 52 feet of new R/W will be required on the east side and 60 feet on the west side.

North of Dixileta to Carefree Highway: The 5+1 section will be extended north to Carefree Highway. Full widths are employed with ditches for onsite drainage and width for a future auxiliary lane in both directions. The City of Phoenix and/or adjacent developers will extend one-way frontage roads north from Dixileta Drive to Carefree Highway and will construct intermediate interchanges at Dixileta Drive, Lone Mountain Road, and Dove Valley Road as future development warrants. In order to

accommodate these frontage roads, approximately 52 feet of new R/W will be required on the east side and 60 feet on the west side.

ADOT is currently in the final design stage for the improvements to the I-17 and Carefree Highway TI. This project consists of providing additional capacity and improved operations for the traffic interchange.

Carefree Highway to New River TI: From the Carefree Highway TI north to the New River TI, a 4+1 section will be provided, plus auxiliary lanes from the Pioneer Road TI to the Daisy Mountain TI and from the Daisy Mountain TI to the Anthem TI. No new right-of-way is required to accommodate the proposed cross section from Carefree Highway to Anthem Way. The existing frontage roads between Anthem Way and the New River TI will remain in their current locations with drainage channels added to the outside to handle onsite flows. Approximately 30 feet of new R/W is required on the west side and 34 feet on the east side to construct the drainage channels.

North of the New River TI, the existing alignment bifurcates and widening will consist of a combination of inside and outside widening. The HOV lane ends at the New River TI and a 4+0 section extends north to the Black Canyon City TI, the northern study limit.

Because of geometric deficiencies and because it will not accommodate the proposed widened mainline, the interchange at **Table Mesa Road** (MP 236) was considered for improvement. It is recommended that **Alternative 8, Roundabouts with Crossroad Located 600 Feet South**, be designed and constructed at this location. This alternative corrects existing geometric deficiencies, enables easier construction of the new structures over I-17, involves no utility relocations, requires minimal right-of-way, and has fewer impacts to the New River floodplain than the other alternatives. The roundabout intersections will easily accommodate frontage road connections and ramp exits and entrances at a common location. Roundabout geometry will also produce much lower speeds through the intersection, decreasing the chances for serious accidents. Approximately 1.5 acres of right-of-way will be required for the interchange improvements.

Frontage Roads from Rose Garden Lane to Carefree Highway were also considered. It is recommended that the existing two-way frontage roads from Happy Valley Road to the Dixileta Drive alignment be converted to one way as intermediate interchanges are constructed by the City of Phoenix. In addition, the City will be responsible for the design and construction of one-way frontage roads between Pinnacle Peak Road and Happy Valley Road and one-way extensions of the frontage roads from the Dixileta Drive alignment north to Carefree Highway.

Approximately 63 acres of right-of-way will be needed to construct the project. Right-of-way is anticipated to cost approximately \$32 million.

The estimated total cost of the construction for the proposed improvements is \$ 425,364,000, with an additional \$ 31,732,000 needed for right-of-way acquisition, for a total project cost of \$ 457,096,000. An Implementation Plan is included as part of this report.

The 2004-2007 Transportation Improvement Plan includes funding for the design of mainline widening improvements from SR 101L to Carefree Highway (FY 2006) and for the reconstruction of the Carefree Highway TI (FY 2005) in a separate project. Funding is included in ADOT's Five Year Transportation Facilities Construction Program (FY 2005-2009) for the construction of the initial widening project within the I-17 study area from SR 101L to Carefree Highway (FY 2008). "Interim improvements" were recently completed at the Pinnacle Peak TI, which included the addition of slip ramps from the mainline to the frontage roads on the south side of the TI and widening the existing structure to three lanes. Widening of the cross roads of Pinnacle Peak Road and Happy Valley Road is programmed on either or both sides of I-17; however, the reconstruction of the

TI structures is not programmed. A new TI was completed in 2003 at Daisy Mountain Drive, midway between the Pioneer and Anthem TIs.

Additional reports being developed for this study include an Environmental Assessment and Section 4(f) evaluation (SR 101L to New River TI), AASHTO Controlling Design Criteria Report, Project Scoping Report, Traffic Reports, Geotechnical Report, Preliminary Drainage Report, Environmental Overview (SR 101L to Black Canyon City TI), Cultural Resources Assessment, Visual Impact Assessment, Biological Evaluation, Air Quality Report, and Preliminary Noise Analysis.